

**BANNOCK CREEK RESEARCH NATURAL AREA**

**Management Plan**

USDA, Forest Service  
Idaho City Ranger District  
Boise National Forest

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# BCRNA

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## I. POLICY

Research Natural Areas (RNAs) are part of a National System of lands designated in perpetuity for research, education, and maintenance of biological diversity. They are established on National Forest lands and chosen for their significant biological and physical features. They are important in protecting typical and unique terrestrial and aquatic ecosystems for non-manipulative research, observation, study, and monitoring. They are intended to provide valuable plant and animal gene pools especially for endangered, threatened, and sensitive species.

Authority for establishing RNAs dates back to the Organic Administration Act of 1897 (16 USC 551) which authorizes the secretary of Agriculture to designate them. Later, under regulations of 7 Code of Federal Regulations (CFR) 2.24, the Secretary delegated this authority to the Chief of the Forest Service who, pursuant to 36 CFR 251.23, selects and establishes RNA's as part of the continuing land and resource management planning process for the National Forest System. The Forest Service manual (FSM) 4063 provides direction in management of RNAs: the Forest Service will cooperate with other public agencies and private professional organizations. Natural, ecological, and physical processes should be allowed to predominate in RNAs, while preventing human-induced activities that directly or indirectly modify ecological processes.

## II. BASIS FOR ESTABLISHMENT

The Bannock Creek Research Natural Area (BCRNA) was established in 1972 as a study area for five different plant associations. In two of these Douglas-fir is the climax tree species; in two, ponderosa pine is the climax tree; and the fifth is a shrub-grass community (Ryker 1970). This area was selected because it contained an old growth forest with many scattered large trees. It had never been logged, it had been forty years since the last livestock grazing, and except for some evidence of mining in the upper most part, there was very little sign of disturbance by humans. Historically, these vegetation types were heavily logged and commonly the more valuable big trees were selectively cut. Livestock grazing continues over much of the landscape in the Boise National Forest. Consequently, few undisturbed examples of these habitat types remain today. The purpose of the BCRNA, with its diversity in soils and vegetation, was to protect this area against disturbance for future ecological research (Ryker 1970). The management objectives were vague.

Since the dedication of BCRNA, its appearance has changed and our understanding of its value has become more focused. Today we can even better appreciate the foresight of those who worked to establish it. The BCRNA is a valuable resource for studying the natural processes and cycles in old growth ponderosa pine and Douglas-fir forests of south-central Idaho. It is valuable for monitoring wildlife and vegetation diversity through time, especially as it relates to climate change, pollution, or other unforeseen changes in the environment. It is valuable for monitoring wildlife, vegetation, watershed, carbon and nutrient cycling, small vertebrate and nonvertebrate populations, and other resources in comparison to human caused disturbance, multiple use, and ecosystem management

in similar habitat types within the Boise Basin. It is valuable for the study the very large old growth trees themselves. Now it is valuable for monitoring the vegetation response and natural site recovery after a stand-replacing wild fire. Of course, where there is opportunity for study and observation, there is opportunity for education.

### III. OBJECTIVES FOR MANAGEMENT

The primary objectives for management of the BCRNA are:

1. To preserve an area of old growth ponderosa pine and Douglas-fir representing some of the following habitat types (Steele and others 1981):
  - Douglas-fir/ mountain snowberry
  - Douglas-fir/ elk sedge
  - Douglas-fir/ pinegrass
  - Douglas-fir/ white spirea
  - Douglas-fir/ ninebark
  - Douglas-fir/ mountain maple
2. To preserve an area of sagebrush-forb- grass community.
3. To Restore the ecological integrity and natural processes which historically maintained these communities in a stable old growth condition.
4. To provide a reference area for the nonmanipulative study of succession, populations biology, ecosystem processes, and act as a control area for comparing results from manipulative research and effects of resource management techniques and practices.
5. To provide on-site and extension educational activities. Research use should not degrade or jeopardize natural ecological conditions or processes.

### IV. DESCRIPTION OF THE BANNOCK CREEK RESEARCH NATURAL AREA

#### A. General Description

The 430 acre BCRNA spans the Bannock Creek drainage within the Boise Basin Experimental Forest within the Boise National Forest. The area runs from the 6200 ft elevation ridge top on the southern boundary down the northeast facing slope to Bannock Creek and then up the southwest facing slope to the 5950 ft elevation ridge on the eastern boundary (Fig. 1). Bannock Creek flows at about 5000 ft above sea level in the BCRNA. Two minor tributaries to Bannock Creek drain the area south of the creek and two more lie in the area to the north. BCRNA is situated within the Idaho Batholith and has the soils derived from granitic parent material that are typical of central Idaho. It is six miles southeast of Idaho City within sections 8, 9, 16, and 17 in Township 5 North and Range 6 East. See the legal description in Appendix A.

The mean annual precipitation at Idaho City is 23.4 inches. More than half comes as winter snowfall. Mean annual temperature is 44.8 degrees F; the mean monthly temperatures for July is 66.7 and January is 23.3.



The topography is classed as mature. Ridgetops are narrow and slopes moderate to steep. The valley bottom and draws are V-shaped. Olson (1965) described six different soils within BCRNA. All but one are coarse textured soils derived in place from the underlying granitic bedrock. The other soil type has a fine loamy texture.

Most of the BCRNA was forested before the summer of 1994. At that time, lightning ignited a wild fire in the BCRNA which burned the entire area south of Bannock Creek and much of it intensely. All but about 10 acres in the area north of Bannock escaped the fire. This area includes several of the dry end Douglas-fir climax habitat types. Overstory cover types range from nearly pure ponderosa pine to a mixture of ponderosa pine and Douglas-fir in an uneven-aged old growth state. The other important plant association is an essentially treeless habitat type with a rich flora of dry site shrubs, forbs and grasses.

## B. History

Steele (and others 1986) found the historic fire frequency to average about 16 years in Bannock Creek. Sloan (1995) verified that the last fire to burn the BCRNA was in 1889. At the time of the last fire, the forests were much less dense than they are today. They consisted of mostly scattered and clustered ponderosa pine on the north side of the creek with Douglas-firs mixed into the draws and creek bottoms. On the south side of the creek, the large open-grown trees appear to have also been widely scattered. However, Douglas-fir species composition was much higher there, especially with increasing elevation and on north slopes. The understory was probably maintained in grasses with only scattered shrubs.

The frequent light fire regime was very effective in cleansing the understory of much of the tree regeneration and shrubs. When the fires stopped, ponderosa pine and Douglas-fir regeneration survival began to increase. Then in the early 1900's the hooves of livestock grazing the area scarified the soil surface, creating perfect seedbeds for conifer seedlings. The effective fire suppression efforts of the Forest Service is credited with keeping fire out of the BCRNA until 1994. The result was an explosion in ponderosa pine and Douglas-fir regeneration from about 1900 to 1940. In 1933 the Boise Basin Experimental Forest was established to study harvesting and regeneration methods in old growth ponderosa pine. At that time livestock grazing was excluded and in the next few years tree regeneration almost stopped.

Since then, the forests of the BCRNA have progressed toward climax without major disturbance. Dense understories and deep litter layers developed. In the early 1980's a outbreak of Douglas-fir Beetles killed many of the large, density-stressed, Douglas-fir trees. In the early 1990's the western pine beetles took heavy casualties in all age classes of ponderosa pine. Stands with large deposits of fuel have resulted.

## C. Element Description

Garton (and others 1983) found the forested parts of BCRNA to be dominated by two habitat types: Pseudotsuga menziesii/Spiraea betulifolia-Pinus ponderosa

phase (PSME/SPBE); and Pseudotsuga menziesii/Physocarpus malvaceus-Pinus ponderosa phase (PSME/PHMA).

The PSME/SPBE habitat type is common in the southern Idaho Batholith. The Ponderosa pine phase is found on warm, lower elevations from 3,300 to 6,000 ft. Soil parent materials are mostly granitics, basalts, and some andesite. Textures range from loamy sand to clay loam. A few are gravelly. Timber productivity is moderate to high on these sites. Some sites provide important forage and cover to deer and elk. Deer may use these areas for fawning. This habitat type provides important nesting sites to Stellar's Jay, red-breasted nuthatch, and Cooper's hawk. Wild turkeys may roost in the large pines and feed on the seeds (Steele and others 1981).

The PSME/PHMA habitat type is also very common on the southern batholith, especially on steep slopes of northerly aspect. This habitat type can be found from 3,100 to 7,100 feet above sea level and represents the warm, mild environments. Soil parent materials are mostly granitics or basalts, occasionally quartzite. Timber productivity is moderate to high. This habitat type is important to big game animals for forage and cover. It is also important habitat for ruffed grouse, wild turkey, pileated woodpecker, mountain chickadee, red-breasted nuthatch, and pygmy owl.

Like the upper slope north of Bannock Creek, much of the landscape of the southern batholith does not support forest. The nonforest types typically occur in upper slope positions of southerly aspect where soils are poorly developed and bedrock is close to the surface. These soils are extremely low in silt, clay, and organic matter and they lack organic horizons.